ORIGINAL ARTICLE

Engaging Mothers' Education and Nutrition Support for Childhood Stunting in the Bojonegoro District

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ABSTRACT

Introduction: Children under five years old are a golden period for growth and development. Malnutrition in the first thousand days of life results in stunting, that is, children are short in stature, and not appropriate for their age. The research aims to analyze the relationship between maternal education and nutritional requirements and the incidence of stunting. **Materials and methods:** This research uses a retrospective analytical approach. The population of all stunting toddlers in Bojonegoro, a sample of 46 respondents using a simple random sampling technique. Data collection using questionnaires and observations, data processing using editing, coding, scoring, and tabulating, and data analysis using the Spearman Rho test. **Results:** Maternal education in the low category was 26 (56.5%) with the incidence of stunting in the short category being 35 (76.1%) and the statistical test results were ρ value=0.446, α<0.5, there was a relationship between maternal education and the incidence of stunting. Fulfillment of nutrition in the poor category of toddlers was 25 (54.3%) with the incidence of stunting in the short category being 35 (76.1%), the results of the statistical test were ρ value= 0.001 α< 0.5, there was a relationship between nutritional fulfillment and the incidence of stunting. **Conclusion:** Maternal education and nutritional requirements are related to the incidence of stunting. Advice the mother to adopt a good diet. frequency three times a day, snacks twice, and varied menu increases appetite. Monitor weight and height and consult at Posyandu.
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INTRODUCTION

The first thousand days of life are a golden period because, during the fetal period until a child is two years old, there is a very rapid growth and development process that does not occur in other age groups. At this time, they require higher nutrients than adults. On the other hand, the digestive system at this age has yet to develop fully, so proper feeding is needed both in quantity and quality. Poor nutritional patterns at this age disrupt the toddler's growth process. Adequate dietary intake in toddlers affects the metabolic condition of children, whereas metabolic disorders affect the child's developmental condition, which will result in stunting in children (1). The phenomenon at the Mejuwet Community Health Center, Bojonegoro Regency, is that there are still many mothers with poor eating habits and low height compared to their age.

The World Health Organization explains that the prevalence of toddler stunting worldwide is still high; the prevalence target in 2024 is 14%, and the standard stunting rate is below 20%(2). The Integrated Toddler Nutritional Status Survey (SSGBI) results by the Ministry of Health of the Republic of Indonesia show that the proportion of stunting in Indonesia is 21.6%, wasting 7.7%, and underweight 17.1% (3). Based on the East Java provincial health service profile in 2022, the highest stunting cases were in Pasuruan, while Bojonegoro ranked 35th out of 37 cities in East Java(4). Toddler weighing activities are an instrument for monitoring health status and early detection of toddler health. Based on the Bojonegoro health service profile, the number of toddlers weighed in 2021 was 79,599. The nutritional status of toddlers was 5,094 (6.8%) children. The short toddler status was 4,277 (5.7%) children, and the thin toddler status was 3,834 (5.1%) children(5). At the Mejuwet Community Health Center, there is the highest stunting rate in Bojonegoro Regency in 2021, there were

214 children experiencing stunting.

Stunting is caused by multiple factors, namely poor parenting practices, including the mother's lack of knowledge regarding health and nutrition, based on the low education of toddler mothers. The mother's education factor plays a vital role in the mother's ability to choose and consume good food, which will influence the daily nutrition needed to maintain healthy body functions of children. On the other hand, if the food selected and consumed is not appropriate (quality or quantity), then the body will lack certain essential nutrients. Food intake influences nutritional status. Nutritional status will be optimal if the body obtains enough nutrients, enabling optimal physical, brain, and psychomotor development(6). However, nutritional status is lacking for an extended period. In that case, it will result in stunting, signs of short stature, poor social appearance, cognitive decline, and academic decline at a later age.

The solution is that mothers must provide a balanced diet containing high levels of animal protein, rice, vegetables, and fruit. Actively seek information to increase knowledge, actively attend Posyandu, provide exclusive breastfeeding, provide companion breast milk after six months, and continue giving breast milk until the child is two years old. Provide a variety of types of food so that the nutritional composition is adequate(7). Do not give candy, chocolate, or foods with artificial sweeteners, preservatives, and chemical flavorings. Monitor toddlers' growth at public health centers for early detection of growth and development disorders, recording and reporting(8). Mothers should consult a health worker.

MATERIALS AND METHODS

Research Design

The study is a correlational analytic with a retrospective approach. In this study, we have identified cases of stunting consisting of short and very short and then we retrospectively traced the history of previous nutritional patterns and maternal education.

Participants

We took the population of all toddlers with stunting at the Mejuwet Health Center in 2022 totaling 52 children. We took a random sample of 46 children. We made a sampling frame listing all children who experienced stunting at the Mejuwet Health Center. We drew respondents using lottery paper coded 01 to 52. The lottery numbers drawn were marked on the sampling frame. The selected numbers were 46 children as research respondents. The inclusion criteria for this study were stunted children without complications and cared for by their own parents. While the exclusion criteria were toddlers with congenital defects and cared for by people other than their parents.

Instrument

We obtained stunting data based on secondary data from the Maternal and Child Health register of the Mejuwet Health Center in 2022. The child's dietary pattern questionnaire includes types of food, feeding times, and portion sizes developed in 10 questions(9). If the respondent answers Yes, a score of 1 is given and if the respondent answers No, a score of 0 is given. Dietary patterns are categorized as good if the score is > 75, sufficient if the score is 57-74, and inadequate if the score is <57. We also provided a questionnaire to identify maternal education which was categorized as low education if elementary and junior high school, secondary education if high school and higher education if diploma and bachelor's degree (10). Before we gave the questionnaire to the respondents, we had conducted a trial on 15 mothers of toddlers in other areas to test the validity and reliability. We used the Pearson Product Moment test with a significance value of 0.05. The validity of the dietary pattern questionnaire found a correlation value of r 0.456 to 0.734. Reliability was tested using Cronbach's Alpha and obtained a result of 0.654 so that it can be said that the questionnaire is valid and reliable.

Data Collection

We collected the data ourselves without involving enumerators. We obtained stunting case data based on secondary data. After the sample was selected, we visited the respondent's house and conducted guided interviews with the mothers of the selected toddlers. We collected data on toddlers' eating patterns and maternal education simultaneously.

Data Analysis

We processed the data descriptively by presenting data on eating patterns, maternal education and stunting prevalence in the form of percentages. We analyzed the correlatoin between nutritional patterns and stunting incidents using the Spearman Rho correlation test with a significance level of 0.05, as well as the correlation between education and stunting. We used this analysis because both variables have an ordinal data scale. Data was processed using SPSS version 23.0.

Ethical Clearance

This study also received permission from the ethics committee with the number: 04/LPPM.STIKES.R/IX/2023 providing approval to protect the rights and confidentiality of research participants in stunted children.

RESULTS

Based on data collection from 46 respondents, more than half of the parents of toddlers aged 30-34 years were 29 (63.0%) respondents. Some parents of toddlers do not work 23 (50.0%). Of all toddlers aged 12-24 months, 46 (100.0%) respondents. All toddlers were sick >1 time in

1 year as in Table I.

Table I : Demographic data

No	Characteristic	Amount	(%)
1.	Mother age		
	30-34	29	62.3
2.	Work		
	Not working	23	20
3.	Child's gender		
	Male	29	63
4.	Childhood age		
	12-24 month	46	100
5.	Immunization		
	Yes	46	100
6.	Sick in 0ne Year		
	More than once	46	100

Based on research data, more than 26 (56.5%) respondents were parents of toddlers with elementary education (SD and SMP), as in Table II. More than half of the nutritional requirements for toddlers are in the inadequate category, 25 (54.3%) respondents in table III. Most of the stunting incidents in toddlers were in the short category, 35 (76.1%) respondents, can be seen in Table IV.

Table II : Distribution level education parent-toddler

No	Education	Amount	(%)
1.	Elementary school	26	56.5
2.	Middle Education	16	34.8
3.	Collage	4	8.7
Amount		46	100.0

Table III: Distribution Nutrition support

No	Support Nutrition for Toddlers	Amount	%
1.	Lack of nutritional requirements	25	54.3
2.	Fulfillment of adequate nutrition	7	15.2
3.	Fulfillment of good nutrition	14	30.4
Amount		46	100.0

Table IV: Distribution Incident *Stunting* in Toddlers at Community Health Centers Mejuwet Regency Bojonegoro.

No	Incidence of *Stunting* in Toddlers	Amount	%
1.	Very short	11	23.9
2.	Short	35	76.1
Amount		46	100.0

Based on the results of the cross table between maternal education and the incidence of stunting, it was found that mothers with low education had stunted children in the short category 19 (41.3%) more than those in the very short category 8 (17.4%), as in Table V. The results of the statistical test are p value=0.446, α<0.5, there is a relationship between maternal education and the incidence of stunting.

Table V: Cross Table About Engaging Mothers' Education With Stunting Incident

Education	Stunting				P	R
	Very short	%	Short	%		
Elementary school	8	17.4	19	41.3	0.001	0.492
Middle school	2	4.3	13	28.3		
College	1	2,2	3	6.5		
Total	**11**	**23.9**	**35**	**76.1**		

Based on the cross table of nutritional requirements for stunting incidents, it was found that nutritional fulfillment was in the deficient category. More than half of the short-category stunting incidents were greater, namely 14 (30.4%) respondents than very short-category stunting, namely 11 (24%), as in table VI. The results of the Spearman Rho statistical test p value=0.001 α<0.05 there is a relationship between nutritional fulfillment and the incidence of stunting.

Table VI: Cross Table About Engaging Support Nutrition with Stunting Incident

Support Nutrition	Stunting				p	R
	Very short	%	Short	%		
Good	0	0	14	30.4		
Enough	0	0	7	15.2	0.0046	0.115
Not enough	11	24	14	30.4		
Total	**11**	**24**	**35**	**76.1**		

DISCUSSION

Of the 46 respondents, more than 26 (56.5%) of the toddler's parents had primary (low) education, and more than 25 (54.3%) of the respondents' nutritional fulfillment in the toddler category was related to the incidence of stunting in the toddler. In the short category, there were 35 (76.1%) respondents.

The mother's education level is higher than primary education, so the ability to receive information is also lacking. The mother's relatively basic level of education will make it difficult to understand the data obtained because education lays the foundation for understanding within the individual(11). Information will increase knowledge about the importance of nutrition in toddlers so that they can know the impact on children's growth (12).

Balanced nutrition is a daily food composition that contains nutrients in types and quantities that suit the body's needs. Breast milk (ASI) is the only food that contains all the nutrients needed for the growth of babies 0-6 months. Exclusive breastfeeding without adding liquid or other food is the first food in human

life that is nutritionally balanced. However, after six months of age, the baby's nutritional needs increase, so breast milk is no longer enough, so other food ingredients must be added, namely providing additional food. Additional food is given according to the child's needs and digestive system, from soft textures to (hard) family foods. However, breast milk is still given until the age of 2 because up to the age of 2 is a critical period and is included in the window of opportunity period, namely, an opportunity for cell growth and development. A balanced, nutritious diet is necessary to provide breast milk and complementary foods (13). Factors that influence nutritional requirements include the education of toddler mothers. The education level of toddler mothers significantly affects understanding and receiving information. Parents with low education will maintain traditions related to food, such as abstaining from certain foods, making it difficult for them to acquire new nutrition knowledge. Parents with higher education will understand how to care for children, use health service facilities properly, and maintain a clean environment. Maternal education is closely related to the child's nutritional status because the mother directly cares for the child, including preparing and giving food to the child.

From the results of research at the Mejuwet Community Health Center, Bojonegoro Regency, it is known that more than half of the nutritional needs of toddlers are in the deficient category, with as many as 25 (54.3%) respondents. It can be seen from the answers to the questionnaire regarding nutrition support, namely that 25 (54.3%) respondents did not give breast milk alone (without additions such as sugar water, starch water, coconut water) to children up to 6 months of age, when the child was 6-9 months, 30 (65.2%) respondents did not give snacks 1-2 times a day, when children were 9-12 months old, 26 (56.6%) mothers did not provide their children meals 3-4 times a day, 25 (54.3%) mothers did not give their children snacks 1-2 times a day, 33 (71.8%) mothers did not give them bowl of food at each meal. When the child was 12-24 months old, 23 (50%) respondents did not continue to give breast milk to the child besides being given additional food, 32 mothers (69.6%) did not feed the child 3-4 times a day, 29 (63%) respondents did not give their children snacks 1-2 times a day and 37 (80.4%) respondents did not give them of a bowl of food at each meal. The lack of nutritional requirements for toddlers could be caused by socio-economic factors of the respondents where the majority do not have additional income or are only homemakers, so the respondents' ability to buy food depends on the size of their income. Respondents with low incomes are more likely to be unable to meet their food needs, especially to meet children's nutritional needs. The respondents' limited income also determines the quality of food managed daily, both in terms of quality and quantity (14).

Based on the research results, of the 46 respondents, the majority of stunting incidents among toddlers were in the short category, 35 (76.1%) of the respondents. Stunting is measured by height that is more than minus two standard deviations from the median of WHO child growth standards (15). Some of the causes of stunting in toddlers are maternal factors in the form of inadequate nutrition during preconception, pregnancy and lactation, low maternal height, infection, teenage pregnancy, mental health, intra uterine growth restriction (IUGR) and preterm birth, and pregnancy spacing, shortness of breath, and hypertension. Home environmental factors include inadequate stimulation and activity of children, inadequate care, inadequate sanitation and water supply, inadequate access to health services and food availability, inappropriate household food allocation, and low education. Endocrine diseases, skeletal dysplasia, specific syndromes, chronic diseases, and malnutrition. Diabetes mellitus, diabetes insipidus, hypopostamemia rickets, gender, nutritional intake, and low birth weight of the baby.

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The results of research at the Mejuwet Community Health Center, Bojonegoro Regency, show that most stunting incidents in toddlers are in a short category. The incidence of stunting at the Mejuwet Community Health Center is caused by various factors that influence each other, not only due to poor nutritional intake in pregnant women or toddlers, toddlers whose dietary requirements are in the excellent category are 14 (30.4%) toddlers and whose nutritional requirements are adequate 7(15 .2%) toddlers, can be affected by infectious diseases, children are sick more than once in 1 year. Contagious diseases are prone to occur and are often experienced by toddlers. Because toddlers are an age group that is vulnerable to nutrition and disease, and one of the problems often experienced by toddlers

is diarrhea and acute respiratory infections. Recurrent and frequent diarrhea in children can increase the possibility of stunting due to the loss of nutrients that have been and will be absorbed by the body as well as a decrease in the function of the intestinal wall for absorption of nutrients and children who suffer from infectious diseases for a longer duration of time are more likely to experience an incident of stunting (7). They are more likely to experience residual symptoms (sequelae) due to general infections, which will weaken the child's physical condition.

Choosing and consuming good food will influence the fulfillment of daily nutritional needs to carry out and maintain normal body functions. On the other hand, if the food chosen and consumed is not appropriate (both quality and quantity), then the body will lack certain essential nutrients. Food intake influences nutritional status. Nutritional status will be optimal if the body obtains enough nutrients, enabling optimal physical, brain, and psychomotor development (17). Inadequate dietary intake, especially total energy, protein, fat, and micronutrients, is associated with physical growth deficits in children. Adequate protein intake is essential, as nine amino acids have been claimed to be necessary for growth, and the absence of even one of these amino acids will result in stunted growth (18). Protein deficiency is a significant factor in the condition known as kwashiorkor, where there is slowed growth and bone maturation (18).

Fulfillment of nutrition is essential for the development of toddlers. Nutrition support is indirectly influenced by the parenting pattern provided by the mother because the parenting pattern is based on the mother's education as knowledge capital about how the mother provides food, how the mother cares for, and maintains the health and cleanliness of the toddler (19). The food given to toddlers is satisfying and must contain the good nutrients the body needs. Toddler nutritional problems such as stunting can arise because the proportion of food consumed is not correct. Toddlers with inadequate nutritional requirements can fail to achieve nutritional security due to the family's lack of food security. If a family experiences difficulty providing food, the level of consumption will automatically decrease (20). If this happens continuously, it can trigger toddlers to experience chronic malnutrition, which results in toddlers becoming short (21). As well as nutritional fulfillment, one of which is providing Exclusive breastfeeding to children aged 0-6 months. As is known from research results, there are still many toddler mothers at the Mejuwet Community Health Center who do not provide Exclusive breastfeeding to their toddlers. In contrast, nutrition support for toddlers aged 0-6 months is Exclusive. Breastfeeding is a nutritional intake appropriate to needs and will help the growth and development of toddlers. Toddlers who do not get sufficient breast milk have poor dietary intake and can cause malnutrition, one of which can cause stunting. It is because one of the benefits of exclusive breastfeeding is that it supports the growth of toddlers, especially height. After all, breast milk calcium is higher. They are efficiently absorbed compared to breast milk substitutes or formula milk. So, toddlers given exclusive breastfeeding tend to be taller and conform to the growth curve than toddlers given formula milk. Breast milk contains more calcium and can be absorbed by the body sufficiently to maximize growth, especially height, and avoid the risk of stunting. Breast milk also has lower calcium, phosphorus, sodium, and potassium levels than formula milk, while copper, cobalt, and selenium are found in higher levels. The content of breast milk is by the needs of toddlers to maximize the baby's growth, including height (22). Based on this, it can be ensured that the toddler's needs are met and his nutritional status becomes normal, both height and weight, if the toddler receives exclusive breastfeeding.

CONCLUSION

Maternal education and nutritional requirements for toddlers are related to the incidence of stunting at the Mejuwet Community Health Center, Bojonegoro Regency, in 2022. Mothers should increase their knowledge, provide varied food to their children, check their growth and development at the Posyandu, and consult with health workers.

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